

CLAIMS

1. An isolated nucleic acid molecule comprising a MADS box, which is capable of altering the flowering time of a plant.
- 5 2. An isolated nucleic acid molecule according to Claim 1, in which expression of the nucleic acid molecule in the plant, in the sense orientation under the control of a promoter sequence, is capable of delaying the flowering of the plant.
- 10 3. An isolated nucleic acid molecule according to Claim 1, which is capable of accelerating the flowering of a plant.
4. An isolated nucleic acid molecule according to Claim 3, in which expression of the nucleic acid molecule in the
15 plant in the anti-sense orientation under the control of a promoter sequence is capable of accelerating the flowering of the plant.
5. An isolated nucleic acid molecule according to Claim 1, which comprises a nucleotide sequence corresponding to
20 a *FLOWERING LOCUS F* (*FLF*) gene, or a PCR primer or a biologically active fragment derived therefrom.
6. A nucleic acid molecule according to Claim 1, which comprises
 - 25 (a) the nucleotide sequence set out in any one of SEQ ID NOS. 1, 2, 4, and 6 to 15;
 - (b) a nucleic acid molecule capable of hybridizing thereto under at least low stringency hybridization conditions; or
 - 30 (c) a nucleic acid molecule which has at least 70% sequence identity with a sequence set out in (a).
7. A nucleic acid molecule according to Claim 6, in which the nucleic acid molecule is
 - 35 (a) capable of hybridizing to a nucleotide sequence as set out in any one of SEQ ID NOS: 1, 2, 4, and 6 to 15 under high stringency hybridization conditions; or

- 63 -

(b) has at least 80% sequence identity with a sequence set out in Claim 6(a).

8. A vector comprising a nucleic acid molecule according to any one of Claims 1 to 7.
- 5 9. A plant cell transformed with a nucleic acid according to any one of Claims 1 to 7.
10. A plant transformed with a nucleic acid molecule according to any one of Claims 1 to 7.
- 10 11. A method of isolating a nucleic acid molecule capable of altering the flowering time of a target plant, comprising the step of using a nucleic acid molecule according to any one of Claims 1 to 7, or a functional portion thereof, as a hybridisation probe or polymerase chain reaction (PCR) primer, and optionally detecting hybridisation.
- 15 12. A method according to Claim 11, in which the nucleic acid molecule is capable of hybridizing to a nucleotide sequence as set out in any one of SEQ ID NOS: 1, 2, 4, and 6 to 15 under at least low stringency hybridization conditions.
- 20 13. A method of delaying flowering in a plant, comprising the step of introducing a nucleic acid molecule according to any one of Claims 1 to 7 into cells of the plant, optionally such that expression of the nucleic acid molecule is under the control of an inducible promoter, and over-expressing the nucleic acid molecule.
- 25 14. A method of inducing early flowering in a plant, comprising the step of reducing the degree of expression of a nucleic acid molecule according to any one of Claims 1 to 7 in the plant.
- 30 15. A method of modifying the vegetative and/or floral phenotype of a plant, comprising the step of increasing the level of expression of an *FLF* gene, thereby to modify the level of production or activity of a gibberellin in the plant.
- 35

16. A method of modifying the response of a plant to vernalisation, comprising the step of increasing or decreasing the level of expression of an *FLF* gene.
17. A method according to Claim 15 or Claim 16, in which
5 the *FLF* gene comprises a nucleic acid molecule according to any one of Claims 1 to 7.
18. A polypeptide encoded by a nucleic acid molecule according to any one of Claim 1 to 7.
19. An *FLF* polypeptide, comprising the amino acid sequence
10 set out in any one of SEQ ID NOS: 3,5, and 16 to 30, or having at least 70% sequence identity thereto.
20. An antibody directed against a polypeptide according to Claim 18 or Claim 19.
21. A method of assaying the level of expression of *FLF*
15 polypeptide, comprising the step of using an antibody according to Claim 20.
22. A method of selecting plants with low or high levels of expression of *FLF*, comprising the step of determining the level of *FLF* mRNA or *FLF* polypeptide in the plant.
- 20 23. A method according to Claim 21, in which the plants are members of a naturally-occurring population.